

# PHYS 6: INTRODUCTORY PHYSICS

## Foothill College Course Outline of Record

Heading	Value
<b>Effective Term:</b>	Summer 2021
<b>Units:</b>	5
<b>Hours:</b>	5 lecture per week (60 total per quarter)
<b>Prerequisite:</b>	MATH 48C or equivalent.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU/UC
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- Students should understand the following basic concepts from Electricity - charges, electric forces and electric field.
- Students should understand the following basic concepts from mechanics - Kinematics, Newton's Laws, Energy, and Momentum.

## Description

Lectures, demonstrations, and problems in mechanics, electricity and magnetism.

## Course Objectives

The student will be able to:

- Make deductions from the laws of physics
- Analyze problem situations mathematically
- Derive special formulas from general principles
- Identify a problem in a new situation and apply their knowledge to unfamiliar situations
- Assess the limitations of physics laws
- Understand how different cultures have contributed to physics

## Course Content

- Fundamental ideas
  - Dimensional analysis (units)
  - Scientific notation
  - Algebra
  - Trigonometry
  - Analytic geometry
  - Limits
  - Elementary calculus
- Kinematics
  - Speed, velocity
  - Acceleration
  - Free fall
  - Vector addition of velocities
  - Trajectories
  - Circular motion
- Forces
  - Mass, weight

- Newton's laws of motion
- Vector addition of forces
- Friction
- Newton's law of gravitation
- Free body diagrams
- Torque
- Solution of statics and dynamic problems
- Energy and momentum
  - Work
  - Potential energy
  - Kinetic energy
  - Power
  - Conservation of power
  - Linear momentum
  - Collisions
  - Conservation of momentum
- Rotational kinematics and dynamics
  - Speed acceleration
  - Rotational inertia
  - Rotational kinetic energy
  - Angular momentum
- Electrostatics
  - Coulomb's law
  - Electric fields
  - Electric potential
  - Capacitance
  - Dielectrics
- Circuit properties
  - Current, resistance, Ohm's law
  - Electrical power
  - Resistivity
  - Series and parallel circuits
  - Meters
- Magnetism
  - Magnetic field
  - Sources of magnetic fields
  - Earth's magnetism
  - Induced emf
  - Inductance
- Contributions made to physics
  - Individuals
  - Cultures

## Lab Content

Not applicable.

## Special Facilities and/or Equipment

- When taught on campus: none.
- When taught via Foothill Global Access: on-going access to computer with email software and capabilities; email address; JavaScript enabled internet browsing software.

## Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

- Assignments  
Two in-term tests  
Final comprehensive examination

## Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture  
Discussion  
Cooperative learning exercises  
Demonstration

## Representative Text(s) and Other Materials

Walker, James S.. Physics, 4th ed.. 2010.

Although this text is older than the suggested "5 years or newer" standard, it remains a seminal text in this area of study.

When taught via Foothill Global Access: supplemental lectures, handouts, tests and assignments delivered via email and/or internet; feedback on tests and assignments delivered via email and/or internet; class discussion may be delivered in chat rooms, listservs and newsgroups.

## Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

- A. Students will be expected to complete weekly problem sets as homework.
- B. Students will be expected to read the material in the text prior to the lectures.

## Discipline(s)

Physics/Astronomy